Reviewer's report

Title: Gastric emptying and small intestinal transit time and motility assessed by a magnet tracking system

Version: 1 Date: 14 June 2011

Reviewer: Phil Dinning

Reviewer's report:

Comments to Authors.

This paper represents another stage in the use and validation of the magnetic pill. In this instance it has been validated against “Pillcam” for the measurement of gastric emptying and small bowel transit. Specific comments and questions are listed below in the sections required by the journal:

Major Compulsory Revisions

1. On page 3 in the opening paragraph of the introduction you state that manometry has “unreliable measurement in non-sphincteric regions”. What is your justification for this comment? Do you have any evidence to suggest that it is unreliable?

2. In the data analysis section there are a host of techniques described. I would like some information on how they were validated. For example how did you decide on the definitions for the frequency data? Has the fast Fourier transform analysis been validated? What does weight=0 and weight=1 mean?

3. In the results the frequency data has been presented collectively for the entire small bowel. Did frequencies differ between the proximal and distal small bowel? What was the frequency of contraction in the ascending colon or caecum? You must have those data if you can confirm the ileocaecal transit. Is there a significant drop in the frequency of contraction between the distal ileum and the proximal colon.

4. It is mentioned in both the introduction and discussion that Pillcam may effect contractions and transit? No references are provided in either instance. What evidence do you have for this statement?

5. There is mention in the discussion that it was anticipated that the MTS-1 would be able to measure MMC phase III activity. Why was this not mentioned in the introduction as a potential aim?

6. Overall, while the technique correlates well with Pillcam, the paper fails to provide any clear reason for why this technique would provide clinical or research benefit over any of the other ‘transit’ pills. As pointed out in the paper SmartPill already measures transit in the stomach, small bowel and colon and it is completely ambulatory. The magnet pill requires someone to sit still for up to 8 hrs. It is mentioned in the discussion that MTS-1 can define segmental colonic transit times but that isn’t the point of this paper. Can you detail any advantage in
using your technique over Smartpill? One of the real benefits seems to be the ability to track the exact location of the pill.

Minor Essential Revisions
1. There are 7 figs and only 5 figure legends.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests